Dr. Lei Hu

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NOAA/OAR Global Monitoring Laboratory
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RESEARCH INTERESTS

- Constraining sources and sinks for greenhouse gases and ozone depleting substances to understand their changes in response to human activities, policies, and climate change

EDUCATION

Ph.D., Oceanography, Texas A&M University 2012
B.S., Chemistry, Ocean University of China 2007

PROFESSIONAL EMPLOYMENT

Research Scientist II 2018 - present
Cooperative Institute for Research in Environmental Sciences, University of Colorado
Global Monitoring Division, Earth System Research Laboratory, NOAA

Research Scientist I 2014 - 2017
Cooperative Institute for Research in Environmental Sciences, University of Colorado
Global Monitoring Division, Earth System Research Laboratory, NOAA

NRC Postdoctoral Fellow 2012 - 2014
Global Monitoring Division, Earth System Research Laboratory, NOAA

Graduate Research and Teaching Assistant (alternative between semesters) 2007 – 2012
Texas A& M University

SELECTED PEER-REVIEWED PUBLICATIONS

[Google Scholar H-INDEX: 15; TOTAL CITATIONS: 1139; by 06/16/2021]

Hu, L., A. E. Andrews, K. W. Thoning, C. Sweeney, J. B. Miller, A. M. Michalak, E. Dlugokencky, P. P. Tans, Y. P. Shiga, M. Mountain, T. Nehrkorn, S. A. Montzka, K. McKain, J. Kofler, M. Trudeau, S. E. Michel, S. C. Biraud, M. L. Fischer, D. E. J. Worthy, B. H. Vaughn, J. W. C. White, V. Yadav, S. Basu, and I R. van der Velde (2019), Enhanced North American carbon uptake associated with El Niño, *Science Advances*, 5 (6), eaaw0076, doi: 10.1126/sciadv.aaw0076.

Montzka, S. A., G. S. Dutton, P. Yu, E. Ray, R. W. Portmann, J. S. Daniel, L. Kuijpers, B. D. Hall, D. Mondeel, C. Siso, J. D. Nance, M. Rigby, A. J. Manning, **L. Hu**, F. Moore, B. R. Miller, and J. W. Elkins (2018), An unexpected and persistent increase in global emissions of ozone-depleting CFC-11, Nature, 557, 413 – 417, doi: 10.1038/s41586-018-0106-2.

Hu, L., S. A. Montzka, S. J. Lehman, D. S. Godwin, B. R. Miller, A. E. Andrews, K. Thoning, J. B. Miller, C. Sweeney, C. Siso, J. W. Elkins, B. D. Hall, D. J. Mondeel, D. Nance, T. Nehrkorn, M. Mountain, M. L. Fischer, S. C. Biraud, H. Chen, and P. P. Tans (2017), Considerable contribution of the Montreal Protocol to declining greenhouse gas emissions from the United States, *Geophys. Res. Lett.*, 44, doi:10.1002/2017GL074388.

Butler, J. H., S. A. Yvon-Lewis, J. M. Lobert, D. B. King, S. A. Montzka, J. L. Bullister, V. Koropalov, J. W. Elkins, B. D. Hall, **L Hu**, and Y. Liu (2016), A comprehensive estimate for loss of atmospheric carbon tetrachloride (CCl_4) to the ocean, *Atmos. Chem. Phys*., 16, 10899-10910, doi:10.5194/acp-16-10899-2016.

Hu, L., S. A. Montzka, B. R. Miller, A. E. Andrews, J. B. Miller, S. J. Lehman, C. Sweeny, S. M. Miller, K. Thoning, C. Siso, E. L. Atlas, D. R. Blake, J. De Gouw, J. B. Gilman, G. Dutton, J. W. Elkins, B. Hall, H. Chen, M. L. Fischer, M. E. Mountain, T. Nehrkorn, S. C. Biraud, F. L. Moore, and P. Tans (2016), Continued emissions of carbon tetrachloride from the U.S. nearly two decades after its phase-out for dispersive uses, *Proc. Natl. Acad. Sci.*, *113*(11), 2880-2885, doi:10.1073/pnas.1522284113.

Hu, L., S. A. Montzka, J. B. Miller, A. E. Andrews, S. J. Lehman, B. R Miller, K. Thoning, C. Sweeney, H. Chen, D. S. Godwin, K. Masarie, L. Bruhwiler, M. L. Fischer, S. C. Biraud, M. S. Torn, M. Mountain, T. Nehrkorn, J. Eluszkiewicz, S. Miller, R. R. Draxler, A. F. Stein, B. D. Hall, J. W. Elkins, and P. P. Tans, (2015), U.S. emissions of HFC-134a derived for 2008–2012 from an extensive flask-air sampling network, *J. Geophys. Res. Atmos.*, 2014JD022617, doi:10.1002/2014JD022617.

Montzka, S. A., M. McFarland, S. O. Andersen, B. R. Miller, D. W. Fahey, B. D. Hall, **L. Hu**, C. Siso, and J. W. Elkins (2014), Recent Trends in Global Emissions of Hydrochlorofluorocarbons and Hydrofluorocarbons: Reflecting on the 2007 Adjustments to the Montreal Protocol, *J. Phys. Chem. A*, *119*(19), 4439-4449 doi:10.1021/jp5097376.

Hu, L., S. A. Yvon-Lewis, J. H. Butler, J. M. Lobert, and D. B. King (2013), An improved oceanic budget for methyl chloride, *J. Geophys. Res. Oceans,* 118, 715–725, *doi:*10.1029/2012JC008196.

Liu, Y., S. A. Yvon-Lewis, D. C. Thornton, J. H. Butler, T. S. Bianchi, L. Campbell, **L. Hu**, and R. W. Smith (*2013*), Spatial and temporal distributions of bromoform and dibromomethane in the Atlantic Ocean and their relationship with photosynthetic biomass, *J. Geophys. Res. Oceans,* 118, 3950–3965, *doi:*10.1002/jgrc.20299.

Hu, L., S. Yvon-Lewis, Y. Liu, and T. S. Bianchi (2012), The ocean in near equilibrium with atmospheric methyl bromide, *Global Biogeochem. Cycles*, 26, GB3016, *doi*:10.1029/2011GB004272.

Hu, L., S. A. Yvon-Lewis, J. D. Kessler, I. R. MacDonald (2012), Methane fluxes to the atmosphere from deepwater hydrocarbon seeps in the northern Gulf of Mexico, *J. Geophys. Res.*, 117, C01009, *doi:* 10.1029/2011JC007208.

Mahajan, A. S., J. C. Gomez Martin, T. D. Hay, S.-J. Royer, S. A. Yvon-Lewis, Y. Liu, **L. Hu**, C. Prados-Roman, C. Ordonez, J. M. C. Plane, A. Saiz-Lopez (2012), Latitudinal distribution of reactive iodine in the Eastern Pacific and its link to open ocean sources, *Atmos. Chem. Phys*., 12, 11609-11617, *doi*:10.5194/acp-12-11609-2012.

Wei, F., **L. Hu**, G. Chen, Q. Li, and Y. Xie (2012), Reconstruction of summer sea-level pressure over East Asia since 1470, *J. Climate*, *25*(16), 5600-5611, doi:10.1175/JCLI-D-11-00298.1.

Yvon-Lewis, S. A., **L. Hu**, and J. Kessler (2011), Methane flux to the atmosphere from the Deepwater Horizon oil disaster, *Geophs. Res. Lett.*, 38, L01602, doi: 10.1029/2010GL045928.

Liu, Y., S. A. Yvon-Lewis, **L. Hu**, J. E. Salisbury, and J. E. O'Hern (2011), $CHBr_3$, CH_2Br_2, and $CHClBr_2$ in the U.S. Coastal Waters during the Gulf of Mexico and East Coast Carbon (GOMECC) Cruise, *J. Geophys. Res.*, 116, C10004, *doi:* 10.1029/2010JC006729.

Hu, L., S. A. Yvon-Lewis, Y. Liu, J. E. Salisbury, J. E. O'Hern (2010), Coastal emissions of methyl bromide and methyl chloride along the eastern Gulf of Mexico and the east coast of the United States, *Global Biogeochem. Cycles*, 24, GB1007, *doi:*10.1029/2009GB003514.

Valentine, D. L., J. D. Kessler, M. C. Redmond, S. D. Mendes, M. B. Heintz, C. Farwell, **L. Hu**, F. S. Kinnaman, S. Yvon-Lewis, M. Du, E. W. Chan, F. G. Tigreros, C. J. Villanueva (2010), Propane respiration jump-starts microbial response to a deep oil spill, *Science*, 330, doi: 10.1126/science.1196830.

Xie, Y., F. Wei, G. Chen, T. Zhang, and **L. Hu** (2010), Analysis of the 2008 heavy snowfall over South China using GPS PWV measurements from the Tibetan Plateau. *Ann. Geophys*., 28, 1369-1376.

Hu, L., S. Liu, J. Ren, Y. Zhu, and J. Zhang (2009), Study on the distribution of acid volatile sulfide in sediments of coastal zone of the East China Sea, *Marine Environ. Sci.,* 28 (5), 482-486. *(Chinese with English abstract)*

TECHNICAL AND SCIENTIFIC REPORTS

- Report on the unexpected emissions of CFC-11, Ozone Research and Monitoring – Report XX, Global Atmospheric Watch, World Meteorological Organization (Contributor)
- Chapter 2 – Hydrofluorocarbons (HFCs), Scientific Assessment of Ozone Depletion:2018, WMO Global Ozone Research and Monitoring Project – Report No. 58 (Contributor)
- Global Monitoring Division 2018 – 2022 Research Plan, 2018, available at https://www.esrl.noaa.gov/gmd/about/GMD_Research_Plan_2018-2022.pdf (Contributor)
- SPARC Report on the Mystery of Carbon tetrachloride. Q. Liang, P.A. Newman, and S. Reimann (Eds.), 2016, SPARC Report No. 7, WCRP-13/2016, available at www.sparc-climate.org/publications/sparc-reports/sparc-report-no7. (Coauthor)
- Yvon-Lewis, S. A. and L. Hu (2011), Chapter 8: Halocarbon Air Sea Transect – Atlantic (HalocAST-A) – Fall, in "the Expedition of the Research Vessel "Polarstern" to the Antarctic in 2010 (ANT-XXII/1)" ed. by Karl Bumke, Reports on Polar and Marine Research, 628

RESEARCH GRANTS

- Regional inverse modeling in North and South America for the NASA Carbon Monitoring System, NASA Carbon Monitoring System, 07/01/2021 - 06/31/2024 (co-I)
- Toward disentangling causes for the substantial increase of CO_2 seasonal amplitude in the Arctic, NASA Terrestrial Ecology, 4/2019 – 3/2022 (PI)
- Diagnosis of North American CO_2 and CH_4 fluxes with the expanded in situ measurement network, NOAA, 9/2019 – 8/2022 (co-I)

- Estimating U.S. Emissions of Non-CO_2 Greenhouse Gases Using Long-Term Atmospheric Observations, the GiST Earth LLC., 12/2019 – 11/2021 (PI)
- Regional inverse modeling in North and South America for the NASA Carbon Monitoring System, NASA Carbon Monitoring System, 11/2017 – 10/2020 (co-I)
- More precisely locating sources of the unexpected increase in CFC-11 emissions using HIPPO and ATom data, NASA, 1/2019 – 3/2020 (co-PI)

HONORS AND AWARDS

- Gold Medal, CIRES, 2021
- Colorado Governor's Award for High-Impact Research, 2019
- Nominee for the U.S. Presidential Early Career Award for Scientists and Engineers, 2019
- Outstanding Performance Award, CIRES, 2019
- Postdoctoral fellowship awarded by National Research Council, USA, 2012 – 2014
- Postdoctoral fellowship offered by the Woods Hole Oceanographic Institution, USA, 2012 (declined)
- Outstanding Achievement Award in advanced oral skills, Texas A&M University, USA, 2008
- Outstanding undergraduate-student thesis, Ocean University of China, 2007
- Outstanding Student Scholarship, Ocean University of China, China (Top 1%), 2006
- Outstanding Student Leader, Ocean University of China, China, 2006
- 2nd prize in "The 5th Challenge Cup - National University Student Business Plan" in the Shandong province, China, 2006 (Team Lead)
- Outstanding Student Scholarship, Ocean University of China, China (Top 1%), 2005
- Outstanding Student Leader, Ocean University of China, China, 2005
- 2nd prize in College Aerobic Gymnastics Team Competition, Qingdao, China, 2005
- Outstanding Student Leader, Ocean University of China, China, 2004
- 1st prize in College Aerobic Gymnastics Team Competition, Ocean University of China, Qingdao, China, 2004
- Outstanding Student Scholarship, Ocean University of China, China, 2004

SERVICES

- Reviewer for scientific journals (2012 -):
    - Atmospheric Chemistry and Physics
    - BAMS
    - Science Advances
    - Environmental Science & Technology
    - Journal of Geophysical Research
    - Geophysical Research Letters
    - Science of the Total Environment
    - Atmospheric Science Letters
    - Earth and Space Chemistry
    - Earth and Space Science
    - Ocean Sciences
- Reviewer for the 2018 WMO scientific Ozone Assessment, 2018
- Member in:
    - Interagency Arctic Research Policy Committee (2021 -)

    - NASA Arctic-Boreal Vulnerability Experiment Science Team (2018 -)
    - NASA Carbon Monitoring System Science Team (2016 -)
    - American Geophysical Union (2007 -)
    - European Geophysical Union (2021 -)
    - Chinese-American Oceanic and Atmospheric Association (2013 -)
    - American Association for the Advancement of Science (2007 - 2014)
- Superior Elementary School Accountability Committee (2019 - 2021)
- NOAA GMD Award Committee (2020)
- NOAA GML eGMAC planning committee (2021)

TEACHING AND MENTORSHIP EXPERIENCE

- Advised students: Katrina Starbird (Yale University), summer 2020
- Co-advised postdocs: Aleya Kaushik (2019 – present)
- Instructor for undergraduate Oceanography Lab, Texas A& M University (4 semesters between 2007 – 2012)
- Field trip training for undergraduate students: Fenix Garcia Tigreros (2010)

PATENT

- Wang, G., A. Deng, X. Lu, Z. Xuan, H. Lin, Q. Li, S. Wu, **L. Hu**, L. Dai, J. Dong, N. Zheng, Q. Hu, Q. Qiao, and Y. Zhong (2006), Solar Distilled Drinking Water Equipment, State Intellectual Property Office of The People Republic of China, ZL 2004 2 0099560.9

C**ONFERENCE PRESENTATIONS**

1. **Hu** et al., Atmosphere-based US emission estimates of SF_6 for 2007 – 2018, GML Virtual Global Monitoring Annual Conference 2021, 24 - 28 May, 2021.
2. Rastogi et al., Evaluating consistency between Total Column CO_2 Retrievals from OCO-2 and the in situ network over North America: implications for carbon flux estimation, GML Virtual Global Monitoring Annual Conference 2021, 24 - 28 May, 2021.
3. **Hu** et al., Toward disentangling causes for substantial increases of CO_2 seasonal cycle amplitude over the Arctic, the 7th ABoVE Science Team Meeting, May 11 & 13, 2021.
4. Kaushik, A., **L. Hu** et al., Detecting changes in the high-latitude carbon seasonal cycle with a multi-model approach, the 7th ABoVE Science Team Meeting, May 11 & 13, 2021.
5. **Hu, L.** et al., Atmosphere-based US emission estimates of SF_6 for 2007 – 2018, vEGU2021, 19 – 30 April, 2021
6. Michalak, A. et al., Using atmospheric observations to assess drivers of terrestrial carbon flux variability across scales, North American Carbon Program: 7th open science meeting, march 26, 2021.
7. Kaushik, A., L. Hu et al., Detecting changes in the high-latitude carbon seasonal cycle with a multi-model approach, 2020 AGU Fall Meeting, Dec 1 – 17, 2020 (Vitual).
8. Henderson, J., et al., High-latitude transport modeling in support of the Arctic-Boreal Vulnerability Experiment (ABoVE), 2020 AGU Fall Meeting, Dec 1 – 17, 2020 (iPoster).
9. Rastogi, B., et al., Comparison of in situ data-constrained total column CO_2 with satellite retrievals at regional and seasonal scales, 2020 AGU Fall Meeting, Dec 1 – 17, 2020 (iPoster).

10. Chatterjee, A., et al., Atmospheric inverse models: bridging spatiotemporal scales for Arctic-Boreal flux estimation, Arctic-Boreal Carbon Flux Upscaling Workshop, Oct 13, 2020 (Vitual).
11. Andrews, A., L. **Hu** et al., CarbonTracker-Lagrange (CT-L): A high-resolution regional inverse model to provide measurement-based flux estimates of atmospheric trace gases over North America, TransCom, Sep 23, 2020 (Vitual).
12. Kaushik, A., L. Hu, et al.: Evaluating changes in the high-latitude carbon seasonal cycle with a multi-model approach. CIRES Rendezvous 2020, August 2020 (iPoster).
13. **Hu** et al., Gross primary production over the North American Arctic and boreal region inferred from atmospheric carbonyl sulfide measurements, GML Virtual Global Monitoring Annual Conference, Jun 22, 2020.
14. **Hu** et al., Toward disentangling causes for substantial increases of CO2 seasonal cycle amplitude over the Arctic, 6th ABoVE Science Team Meeting, Jun 1 - 4, 2020.
15. **Hu** et al., Gross primary production over the North American Arctic and boreal region inferred from atmospheric carbonyl sulfide measurements, 6th ABoVE Science Team Meeting, Jun 1 - 4, 2020.
16. Kaushik, A., **L. Hu**, L. Schiferl, R. Commane, I. Baker, K. Haynes, Evaluating changes in the high-latitude carbon seasonal cycle with a multi-model approach, 6th ABoVE Science Team Meeting, Jun 1 - 4, 2020.
17. Henderson, J., K. McKain, **L. Hu**, High-latitude transport modeling in support of the Arctic-Boreal Vulnerability Experiment (ABoVE), 6th ABoVE Science Team Meeting, Jun 1 - 4, 2020.
18. Andrews et al., Towards an integrated surface-to-space observing system for Greenhouse Gases, OCO-2/OCO-3 Science Team Telecon, May 26, 2020.
19. Andrews, A. and **L. Hu**, Overview and progress of CarbonTracker-Lagrange, ACT Science Team Meeting, Apr 28, 2020.
20. **Hu** et al., Investigating CFC-11 emissions and their changes using ATom, HIPPO, and NOAA global atmospheric sampling, 100th AMS annual meeting, Boston, MA, 12- 16 Jan 2020.
21. **Hu** et al., Gross primary production over the North American Arctic and boreal region inferred from atmospheric carbonyl sulfide measurements, 2019 AGU fall meeting, San Francisco, CA, Dec 9 – 13, 2019.
22. Montzka et al., Atmospheric measurements of CFC-11 through most of 2019: Are global CFC-11 emissions back on the decline?, 2019 AGU fall meeting, San Francisco, CA, Dec 9 – 13, 2019.
23. Kaushik et al., Disentangling photosynthesis and respiration using simulated and observed carbon dioxide and carbonyl sulfide at the CARVE tower in boreal Alaska, 2019 AGU fall meeting, San Francisco, CA, Dec 9 – 13, 2019.
24. Rastogi et al., A strategy for incorporating satellite retrievals in a regional inverse model to infer carbon flux variability over North America, 2019 AGU fall meeting, San Francisco, CA, Dec 9 – 13, 2019.
25. **Hu** et al., Investigating CFC-11 emissions and their changes using ATom, HIPPO, and NOAA global atmospheric sampling, ATom Science Team Meeting, Boulder, CO, Nov 2019.
26. **Hu** et al., Comparison of North American terrestrial CO_2 fluxes derived from CT-L and CMS inverse modeling systems, OCO-2 Science Team Meeting, Boulder, CO, 20 Oct 2019.
27. Rastogi et al., Combining in-situ and satellite observations of CO_2 in a synthesis inversion framework for the US corn belt, OCO-2 Science Team Meeting, Boulder, CO, 20 Oct 2019.

28. **Hu** et al., Largely enhanced North American carbon uptake associated with El Niño, IG3IS-TransCom Meeting, Paris, France, Oct 2019.
29. **Hu** et al., Comparison of North American terrestrial CO_2 fluxes derived from CT-L and CMS inverse modeling systems, OCO-2 Science Team Meeting, Oct 2019.
30. Rastogi et al., Combining in-situ and satellite observations of CO2 in a synthesis inversion framework for the US corn belt, OCO-2 Science Team Meeting, Oct 2019.
31. Kaushik et al., Disentangling Arctic carbon cycle seasonality with a dual-tracer approach using CO_2 and OCS at the CARVE tower in Alaska, Aug 2019.
32. **Hu** et al., Towards disentangling causes for the substantial increase of CO_2 seasonal amplitude in the Arctic, NASA / ABoVE Science Team Meeting, San Diego, May 2019.
33. Montzka et al., On the unexpected increase in CFC-11 emissions, are they still on the rise?, NOAA Global Monitoring Annual Conference, Boulder, May 2019.
34. **Hu** et al., A decadal atmosphere-based estimate on North American terrestrial uptake, CIRES Rendezvous, Boulder, CO, May 2019.
35. **Hu** et al., A decadal atmosphere-based estimate on North American terrestrial uptake, 2018 AGU Fall Meeting, Washington DC, December 2018.
36. Montzka et al., Towards a further understanding of the magnitude and underlying cause for the recent increase in global CFC-11 emission, 2018 AGU Fall Meeting, Washington DC, December 2018.
37. Andrews et al., Towards an optimal strategy for joint assimilation of in situ and remote sensing measurements of CO_2 and CH_4, 2018 AGU Fall Meeting, Washington DC, December 2018.
38. Andrews, A., et al, CarbonTracker-Lagrange simulations for ACT-America, ACT Science Team Meeting, 10 Jul 2018.
39. **Hu, L**., et al., Response of North American terrestrial CO_2 fluxes to climate variability, 2018 Global Monitoring Annual Conference, Boulder, CO, USA, May 22 – 23, 2018.
40. **Hu, L**., et al. Increased propane emissions from the United States, 2018 Global Monitoring Annual Conference, Boulder, CO, USA, May 22 – 23, 2018.
41. Montzka, S., et al., Increasing CFC-11 emissions and other unusual atmospheric changes: how delayed will ozone recovery be?, 2018 Global Monitoring Annual Conference, Boulder, CO, USA, May 22 – 23, 2018.
42. **Hu, L**., et al., CarbonTracker-Lagrange: A modeling tool that amplifies the power of our atmospheric measurements, GMD internal seminar series, April 5, 2018.
43. **Hu, L**., et al., Increased propane emissions from the United States, 2018 AMS Annual Meeting, Austin, USA, January 7 – 11, 2018.
44. **Hu, L**., et al., North American CO_2 fluxes for 2007 – 2015 from NOAA's CarbonTracker-Lagrange regional inverse modeling framework, 2017 AGU Fall Meeting, New Orleans, LA, USA, Dec. 11 – 15, 2017.
45. Elkins, J. W., et al., Halocarbons and other atmospheric trace gases, NDACC Steering Committee Meeting, Boulder, CO, USA, Nov 7, 2017.
46. Andrews, A., L. Hu, et al., CarbonTracker-Lagrange Simulations of OCO-2 Data for North and South America, OCO2 Science Meeting, Boulder, CO, USA, Oct 25 – 26, 2017.
47. Andrews, A., A. Michalak, L. Hu, et al., Top-down constraints on the North American carbon cycle from the first ten years of the North American Carbon Program, 10th International Carbon Dioxide Conference, Interlaken, Switzerland, Aug 21 – 25, 2017.
48. **Hu, L**., et al., Increased propane emissions from the United States, 6th WMO-GAW Expert Workshop on Volatile Organic Compounds, Boulder, CO, USA, May 24 – 26, 2017.

49. **Hu, L.,** et al., Increased propane emissions from the United States, 2017 Global Monitoring Annual Conference, Boulder, CO, USA, May 23 – 24, 2017.
50. **Hu, L**., et al., Toward improvement on estimation of North American CO_2 fluxes from CarbonTracker-Lagrange: a high-resolution regional inverse modeling system for assimilating atmospheric CO_2, 2017 Global Monitoring Annual Conference, Boulder, CO, USA, May 23 – 24, 2017.
51. **Hu, L**., et al., Considerable contribution of the Montreal Protocol to declining greenhouse gas emissions from the United States, 12th annual CIRES Rendezvous and CIRES 50th Anniversary, Boulder, CO, May 18, 2017.
52. Montzka, S. A., et al., The continued slowdown in the decline of atmospheric CFC-11, 2017 Global Monitoring Annual Conference, Boulder, CO, USA, May 23 – 24, 2017.
53. **Hu, L**., et al., CarbonTracker-Lagrange: a high-resolution regional inverse modeling system for estimating North American CO_2 fluxes, 2017 Joint Ameriflux and NACP Principal Investigators Meeting, North Bethesda, MD, USA, Mar 27 – 30, 2017.
54. **Hu, L**., et al., Considerable contribution of the Montreal Protocol to declining greenhouse gas emissions from the United States, 2017 Joint Ameriflux and NACP Principal Investigators Meeting, North Bethesda, MD, USA, Mar 27 – 30, 2017.
55. **Hu, L**., et al., Sustained reduction of total CO_2-eq Emissions of Chlorofluorocarbons and their substitutes from the US, 2016 AGU Fall Meeting, San Francisco, CA, USA, Dec. 11- 17, 2016.
56. **Hu, L**., et al., 2016 Global Monitoring Annual Conference, Boulder, CO, USA, May 17 – 18, 2016.
57. Montzka, S. A., et al., On the uneven decline of atmospheric CFC-11: Bumps in the road to ozone recovery or variations in atmospheric transport and/or loss?, 2016 Global Monitoring Annual Conference, Boulder, CO, USA, May 17 – 18, 2016.
58. **Hu, L**., et al., Carbon tetrachloride emissions from the US during 2008 – 2012 Derived from atmospheric data using Bayesian and Geostatistical Inversions, 2015 AGU Fall meeting, San Francisco, CA, USA, Dec 14 – 18, 2015.
59. Montzka, S. A., et al., Increases in atmospheric chlorine from dichloromethane, a gas not controlled by the Montreal Protocol, San Francisco, CA, USA, Dec 14 – 18, 2015.
60. **Hu, L**., et al., Atmosphere-derived carbon tetrachloride emission from the U.S. during 2008-2012, Workshop on "Solving the Mystery of Carbon Tetrachloride", Zurich, Switzerland, Oct. 5 – 6, 2015.
61. **Hu, L**., et al., Carbon tetrachloride emissions from the US during 2008 - 2012, 2015 Global Monitoring Annual Conference, Boulder, CO, USA, May 19 – 20, 2015.
62. **Hu, L**., et al., Atmosphere-derived national emissions of anthropogenic greenhouse gases from the US over multiple years, 5th NACP Principal Investigators Meeting, Washington D.C., USA, Jan 26 - 29, 2015.
63. **Hu, L**., et al., Atmosphere-derived national emissions of ozone depleting substances and substitutes for the United States, 2014 AGU Fall meeting, San Francisco, CA, USA, Dec 15 – 19, 2014.
64. **Hu, L**., et al., Atmosphere-based top-down emission estimates of hydrofluorocarbons (HFCs) and hydrochlorofluorocarbons (HCFCs) for the US, 7th International Symposium on Non-CO_2 Greenhouse Gases (NCGG7), Amsterdam, the Netherlands, Nov 5 – 7, 2014.
65. **Hu, L**., et al., 2014, Atmosphere-based top-down emission estimates of HFC-134a and HCFC-22 from the US over multiple years, 2014 Global Monitoring Annual Conference, Boulder, CO, USA, May 20 – 21, 2014.

66. **Hu, L**., et al., Atmosphere-based national emission estimates of hydrofluorocarbons (HFCs) and hydrochlorocarbons (HCFCs) from the US, 16th GEIA Conference, Boulder, CO, USA, Jun 10 – 11, 2014.
67. Montzka, S. A., et al., Atmosphere-based estimates of non-CO_2 greenhouse gas emissions for the U.S. derived from$^{14}CO_2$ during 2009-2012, 2014 AGU Fall meeting, San Francisco, CA, USA, Dec 15 – 19, 2014.
68. Montzka, et al., Atmosphere-based estimates of non-CO_2 greenhouse gas emissions for the U.S. derived from $^{14}CO_2$, 16th GEIA Conference, Boulder, CO, USA, Jun 10 – 11, 2014.
69. Montzka, S. A., et al., Recent trends in global concentrations and emissions of hydrochlorofluorocarbons and hydrofluorocarbons, 2014 Global Monitoring Annual Conference, Boulder, CO, USA, May 20 – 21, 2014.
70. **Hu, L**., et al., Atmosphere-based nation-wide emission estimates of hydrofluorocarbons and hydrochlorofluorocarbons from the US, AGU fall meeting, San Francisco, CA, USA, Dec. 8 – 13, 2013.
71. **Hu, L.,** et al., Regional emission estimates of selected anthropogenic greenhouse gases (HFC-134a, HCFC-22, and CH_4) from California, NOAA/ESRL Global Monitoring Annual Conference, Boulder, CO, USA, May 21 – 22, 2013.
72. **Hu, L**., et al., Assessment of various background approaches for their use in deriving regional emissions from atmospheric data, 4th NACP All-Investigators Meeting, Albuquerque, NM, USA, Feb 4 – 7, 2013.
73. Montzka, S. A., et al., Global changes in atmospheric concentrations of hydrochlorofluorocarbons and hydrofluorocarbons: assessing and guiding international policy decisions, AGU fall meeting, San Francisco, CA, USA, Dec. 8 – 13, 2013.
74. Montzka, S. A., et al., ^{14}C-based emission estimates for halocarbons and other greenhouse gases across the U.S., NOAA/ESRL Global Monitoring Annual Conference, Boulder, CO, USA, May 21 – 22, 2013.
75. Montzka, S. A. et al., ^{14}C-based emission estimates fro halocarbons and other greenhouse gases across the U.S., 4th NACP All-Investigators Meeting, Albuquerque, NM, USA, Feb 4 – 7, 2013.
76. Hu, L., et al., Methane fluxes to the atmosphere from deepwater hydrocarbon sources, Student Research Week, Texas A&M University, USA, Mar. 22, 2012.
77. **Hu, L**., et al., Methane fluxes to the atmosphere from deepwater hydrocarbon sources, Global Monitoring Annual Conference, NOAA Eath System Research Laboratory, Boulder, CO, USA, May 15 -18, 2012.
78. **Hu, L**., et al., Using "Top-down" approach to examine atmospheric budgets of methyl bromide and methyl chloride, AGU Fall Meeting, San Francisco, CA, USA, Dec. 5 – 9, 2011.
79. **Hu, L**., et al., The ocean in near equilibrium with atmospheric CH_3Br, 2011 IYC O_3 symposium on stratospheric ozone and climate change, Washington D. C., USA, Nov 7 – 10, 2011.
80. Liu, Y., et al., Polyhalogenated very short-lived substances in the Atlantic Ocean, and their linkages with ocean primary production, AGU Fall Meeting, San Francisco, CA, USA, Dec. 5 – 9, 2011.
81. **Hu, L**. and S. A. Yvon-Lewis, Saturation state of methyl bromide after phaseout, AGU Fall Meeting, San Francisco, CA, USA, Dec. 14 – 19, 2010.
82. **Hu, L**., et al., Air-sea fluxes of methane from deep hydrocarbon seeps in the northern Gulf of Mexico during HYFLUX, workshop on US-DOE funded gas hydrate research, Georgia Tech, Atlanta, GA, USA, Jan 25 – 29, 2010.
83. Yvon-Lewis, S. A., et al., Methane flux to the atmosphere from the Deepwater Horizon Oil Leak, 2010 Fall meeting AGU Fall Meeting, San Francisco, CA, USA, Dec. 14 – 19, 2010.

84. Valentine, D.L., et al., A horizon of natural gas in the deep Gulf of Mexico dominates the microbial landscape, AGU Fall Meeting, San Francisco, CA, USA, Dec. 14 – 19, 2010.
85. Kessler, J. D., et al., Using the Deepwater Horizon disaster to investigate natural biogeochemical cycling associated with rapid methane emissions, AGU Fall Meeting, San Francisco, CA, USA, Dec. 14 – 19, 2010.
86. Liu, Y., et al., Brominated VSLSs in and over the East Pacific During the Halocabon Air-Sea Transect-Pacific cruise (HalocAST-P), AGU Fall Meeting, San Francisco, CA, USA, Dec. 14 – 19, 2010.
87. **Hu, L**., et al., Air-sea fluxes of methane from deep hydrocarbon seeps in the northern Gulf of Mexico during HYFLUX, AGU Fall Meeting, San Francisco, CA, USA, Dec. 14 – 19, 2009. (Student Research Highlight)
88. **Hu, L**., et al., Coastal emissions of methyl bromide and methyl chloride along the eastern Gulf of Mexico and the east coast of the U.S., AGU Fall Meeting, San Francisco, CA, USA, Dec. 14 – 19, 2008.
89. Liu, Y., et al., Bromoform and Dibromomethane in Coastal Waters During the Gulf of Mexico and East Coast Carbon (GOMECC) Cruise, AGU Fall Meeting, San Francisco, CA, USA, Dec. 14 – 19, 2008.
90. Yvon-Lewis, et al., Selected CFC and HCFC Tracers Observed During the Gulf of Mexico East Coast Carbon (GOMECC) Cruise, AGU Fall Meeting, San Francisco, CA, USA, Dec. 14 – 19, 2008.

INVITED SEMINARS AND TALKS

1. Monitoring and modeling atmospheric trace gases, Sichuan University, Sichuan, China, Apr 11 – 12, 2016.
2. Fluxes of gaseous chemicals to the atmosphere from human activities and natural ecosystems and their associated environmental impacts, University of Montana, MT, USA, Feb 18 – 19, 2016.
3. Atmosphere-derived carbon tetrachloride emission from the U.S. during 2008-2012, Workshop on “Solving the Mystery of Carbon Tetrachloride”, Zurich, Switzerland, Oct. 5 – 6, 2015.
4. Methane fluxes to the atmosphere from deepwater hydrocarbon sources, ExxonMobil, Houston, TX, Dec. 19, 2011.